AMERICAN BIRD CONSERVANCY
CONSERVING WILD BIRDS AND THEIR HABITATS THROUGHOUT THE AMERICAS

April 29, 1998

Ms. Magalie Roman Salas
Office of the Secretary
Federal Communications Commission
1919 M Street, NW
Washington, D.C. 20554

Re: Reply Comments in Support of the Preparation of an Environmental Impact Statement in FCC ~~Docket~~ No. 97-296, in the Matter of Preemption of State and Local Zoning and Land Use Restriction on the Siting, Placement, and Construction of Broadcast Station Transmission Facilities MM Docket No. 97-182.

Dear Ms. Salas:

I am again writing on behalf of the American Bird Conservancy and submitting these REPLY COMMENTS to support the preparation of an Environmental Impact Statement in FCC Docket No. 97-296. The rule would preempt local and state environmental statutes and land use controls in an effort to speed the construction of broadcast towers. I personally delivered the initial comments to the Secretary's Office on April 14, 1998, hand delivered them to a clerk in your office, and was assured they would be entered. Unfortunately, the FCC does not list our comments as having been received. The same occurred with our comments that were hand delivered to the FCC on December 1, 1997.

The rule proposed by the Commission in this proceeding would preempt all state or local laws by automatically "deeming granted" any request to a state or local government for any authorizations necessary to construct or modify broadcast transmission towers and facilities (AM, FM and TV) if not acted on within 21 to 45 days of the date of the request. The proposed rule also generally preempts "any State or local land use, building or similar law, rule or regulation that impairs the ability" of broadcasters to place, construct or modify a broadcast tower or transmission facility. Local environmental laws, including those mandated to implement Federal statutes, are among the laws within the preceding preemption and the automatically "deemed granted" provisions of the proposed rule. ABC and numerous others who have filed comments in this matter believe that the Commission's rule weakens environmental protections by deeming as granted all state and local approvals necessary for broadcast towers within 21 to 45 days of a request without regard to whether the substantive requirements of state and local law are complied with. State and local environmental requirements are thus effectively gutted as the short time periods permitted are grossly inadequate to deal with the environmental, permitting, land use, zoning, structural, and other requirements necessary for the siting of ordinary buildings, let alone for broadcast towers which are some of the tallest structures on Earth. Such an action over-riding environmental and siting

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laws warrants the completion of an EIS.

We believe that the proposed rule would have a significant environmental effect requiring the completion of an Environmental Impact Statement (EIS) under the National Environmental Policy Act, 42 U.S.C. §4321, *et seq* (NEPA). The adoption of the proposed rule will adversely impact migratory birds, adversely impact habitat, adversely impact vistas and landscapes, is overly broad, and constitutes a major federal action impacting the environment. In this letter and in the attached chart, we submit documented cases of TV towers killing tens of thousands of migratory birds in the U.S. This proposed rule necessitates an EIS to examine the cumulative impact of expediting the siting of hundreds of 1,000 plus foot towers. CEQ rules mandate that Federal agencies look at the cumulative impact an action may have. "Significance exists if it is reasonable to anticipate a cumulatively significantly impact on the environment [from the proposed agency action]. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts." 40 C.F.R. § 1508.27(b)(7).

We believe that the killings of migratory birds by collisions with towers and supporting structures violate the provisions of the Migratory Bird Treaty Act (MBTA), 16 U.S.C. §§ 703 et seq., which prohibits the killing of migratory birds unless such killing is exempted. Further, the EIS should examine the impact on threatened and endangered migratory birds which are clearly subject to collisions with broadcast towers. The EIS on such impacts on protected species should lead to consultation with the USFWS under Section 7(d) of the Endangered Species Act, 16 U.S.C. §§ 460*l*-s et seq, as well as under the Bald and Golden Eagle Protection Acts, 16 U.S.C. §§ 668, P.L. 87-884, 76 Stat. 1246. An EIS will conclusively establish whether consultation is required. We believe such consultation is required as, in this case, a federal action may affect a protected species. We assert that the Commission must consult with USFWS before proceeding with the proposed rule or at least conduct an EIS to establish the extent of effects on listed species.

We also urge the conduct of an EIS to assess mitigation measures that may be employed in tower construction to avoid killing migratory birds in violation of the MBTA and ESA. Tower kills at WFMJ-TV in Youngstown, Ohio totaled about 4,000 migratory birds from 1974 to about 1990. These kills fell off sharply when street lighting was changed in the mid 1980's. The 1100 ft. tower was lit by tiers of 3-600 watt incandescent bulbs in red globes. The tower is fairly centrally located in the city, and when the city shifted its street lighting program to stronger vapor lights with an orange hue, the massive kills stopped. The total kills varied along a much lower level for the succeeding years until it was no longer practical to collect the kill. Some scientists believe that keeping towers in urban, lighted areas may be likely to lower the kill of migratory birds. This is precisely another reason why an EIS is required in this proposed rulemaking: to ascertain siting limitations and mitigation measures that can be employed to prevent the killing of birds.

The Federal Communication Commission has stated in its original implementation of NEPA that "in the case of antenna towers exceeding 500 feet in height, the impact of the structure on

migratory birds is a matter of concern." NEPA Implementation Order at 1328. The Commission then went on to discuss the bird problem as follows:

> "We would expect an applicant for authority to construct a tall tower to seek out, consider and report such information concerning local migratory patters as is available. Maps of the flyways of some species, particularly waterfowl, cranes and other larger birds, can be obtain from the Office of Migratory Bird Management, U.S. Fish and Wildlife Service, Washington, D.C. However, the usefulness of such maps in siting an antenna structure is limited. For the most part, sufficiently detailed information concerning local migratory patterns particularly for small birds, can be obtained only from ornithologists located at State universities or at other institutions within the area, if at all. The hazard is principally to the smaller song birds, some species of which characteristically fly at night and at lower altitudes than other species. The detection of nocturnal flight patterns involves the use of techniques (notably specially equipped aircraft and/or radar systems) which are not available to the causal bird watcher. (See Bellorse, Frank C., "The Distribution of Nocturnal Migrants in the Air Space," The Auk, Vol. 88, p. 397, April 1971.) The availability of information concerning such patterns varies a great deal from one area to another, depending on the intensity of scientific investigation within the area.
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> We would also expect the applicant to avail himself of such techniques as may be devised to minimize the hazard of tall towers to migratory birds. Evidence exists, for example, that birds are attracted to, rather than warned by, the usual tower lighting; and we would expect the applicant to utilize a modified lighting system, should one be approved by the FAA which had been demonstrated to be a lesser hazard. It is possible, but by no means certain, that the increasing use of strobe lights will lessen this problem."

NEPA Implementation Order at 1328, footnote 14.

The American Bird Conservancy is a national non-profit organization dedicated to the conservation of wild birds in the Americas. We have 71 member organizations working collaboratively through our Policy Council, including the World Wildlife Fund, Environmental Defense Fund, American Ornithologists Union, National Wildlife Federation, and the Peregrine Fund. Many of these groups are quite concerned over bird collisions with towers and other human made structures. We have actively promoted a fatal light awareness program that was pioneered in Toronto, Canada to stem the loss of birds from collisions with lit buildings during migration.

These concerns extend to radio, television, and telephone towers in the path of migratory birds and in particular with the documented high levels of bird mortality that result when these towers are sited on higher land in the four major migratory flyways. We believe that your proposed rule will exacerbate this problem by removing necessary avenues of environmental oversight that could otherwise lead to more environmentally sound siting decisions for broadcast towers. The construction of large towers with their antenna arrays and lighting, large numbers of guy wires, and ancillary buildings will significantly impact migratory birds. Documentation of years of killing of migratory birds from towers is provided in these comments and in the attached chart. The proposed rule would prevent the implementation of state and local laws designed to prevent

towers from harming birds. While we continue to oppose such a rule, at a minimum, a complete EIS should be completed.

NEPA requires the Commission and all other federal agencies to conduct an EIS for all major federal actions affecting the environment. 42 U.S.C. §4332. That requirement effectively supersedes any other Commission rules which may be inconsistent with it. 47 C.F.R. §1.1303. The environmental impact of broadcast towers on migratory birds has been well documented. Researchers believe that conservative estimates indicate that at least 5 million birds a year may be killed by tower created collisions after the adoption of the proposed rule. (Personal communication with Bill Evans of the Cornell Laboratory of Ornithology, March 1998). Location of thousands of more towers under this rule, particularly the very high towers (over 1,000 feet in height) will adversely affect migratory birds. The height and number of these new towers coupled with their location in migratory pathways will unquestionably cause increasing deaths and injuries of migratory birds and hence should require an EIS. The EIS should fully examine mitigation, impacts on birds protected under the Endangered Species Act, and the blatant violation of the migratory Bird Treaty Act this rule would cause. In addition, this rule would expedite the construction of many towers in environmentally sensitive areas such as wetlands, on ridges in the paths of migratory birds, on mountains, or in parks or wilderness areas. The necessity for an EIS should be obvious.

Wherever tower deaths of birds are examined, the inevitable is documented: Communication towers kill migratory birds. Please review the attached chart documenting such kills. Also, one 38 year study of a TV tower in Wisconsin documented the kill of 121,560 birds of 123 species. These were primarily neotropical migratory birds all protected under the MBTA. (C. Kemper, *The Passenger Pigeon*, Vol. 58, No. 3, 1996). Here is more data from a 1,368 feet tall TV tower in Nashville, Tennessee on a hill at elevation 680 feet. The tower is a triangular, 3 sided structure and is supported by 36 guy wires (2 wires attached each of 6 tiers on each of the 3 sides). The television station is WSMV and data was collected for 38 years during fall migration only. Collections occur every morning from September 1 - Oct. 31. To date (1960-1997, 38 years), 19,880 birds of 112 species have been collected at the tower. The top 5 species collected at the tower over the 38 years are:

1. Ovenbird: 4,362
2. Tennessee Warbler: 3,579
3. Magnolia Warbler: 1,992
4. Red-eyed Vireo: 1,618
5. Black-and-white Warbler 1,177

The top 5 single night kills:

1. 9/26/68 (5,399 birds of 62 species)
2. 9/28/70 (3,487 birds of 52 species)
3. 9/28/60 (995 birds of 45 species)
4. 9/21/71 (821 birds of 35 species)
5. 9/27/60 (522 birds of 41 species).

(See, data from Jennifer Nehring and the coordinator of the bird pick-up and identification:

Sandy Bivens, Warner Park Nature Center, Nashville, TN and special acknowledgments to members of NTOS (Nashville Chapter of TN Ornith. Society) and WSMV television.

An estimated 5000 to 10,000 birds, mostly Lapland Longspurs, were killed on the night of January 22nd, 1998 in the vicinity of a 420 foot tall guyed communications tower in western Kansas. Apparently there was a heavy snowstorm which put the birds up at night looking for bare ground, but unfortunately a dense fog occurred and the huge disoriented flock circled the lighted tower and were slaughtered in collisions with the guy wires. In a two day period, people salvaging the kill picked up about 150 pounds of dead Longspurs and many more were left behind. A few Horned Larks, one Chestnut-collared Longspur, and a Dark-eyed Junco were also found. Longspurs were also found dead in nearby wheat fields. Some were impaled by wheat stubble suggesting they were so disoriented by the lights on the tower that they didn't even know which way was up and flew into the ground with full force. The tower had three flashing white strobes. This is interesting because it has been suggested that white strobes cause less mortality than blinking red incandescent lights. There were also power lines and a lighted pumping station, some other smaller towers, buildings, and fences all associated with the tower that evidently contributed to the mortality.

These reported incidents and the attached charts document bird kills found near the towers and of birds that were not removed by scavengers. The likelihood is that actual mortality is much higher as many birds die away from the tower site and many birds are quickly removed by scavengers such as crows, vultures, and racoons.

The killing of tens of thousands of migratory birds by TV and other towers clearly dictates an EIS. The accrued impact of the rapidly increasing number of 200+ foot high communications towers across the continent on migratory birds constitutes a major Federal action with grave environmental impacts. An estimate in the 1970's put the total at 1.2 million per year (Banks, 1979). But there are nearly four times the number of towers today across the continent as in the 70's and there is evidence that somewhere between 2-4 million songbirds are incidentally killed every year. Most studies of tower kills have been done at the tall 1000+ foot towers. The most famous such study was initiated by Herbert Stoddard at the Tall Timbers Research Station near Tallahassee, Florida. Over a 30 year period the annual kill averaged about 1600 birds and carcasses were found under the tower nearly every day from August through November. In New York State, studies at tall towers have been conducted by Wilifred Howard (25 year study at an 850 ft tower in Elmira) and Arthur Clark (31 year study at a number of 1000 foot towers around Buffalo, NY). These studies, conducted only in the fall, averaged hundreds of birds per year with peak years in the thousands. Though it is generally agreed that towers under than 500 feet high pose less threat to migrating birds, the massive Longspur kill noted above documents large kills at smaller towers . Many of the DTV towers under this rule will be the most deadly to birds at heights of over 1,000 feet. According to the NAB, 40% of broadcast towers are over 1,000 feet high -- taller than the Empire State Building and taller than all but a handful of the largest buildings in North America. This is alarming because both these larger and shorter towers are rapidly proliferating and there is great need for long term studies on their impacts on migrating

birds and on the use of mitigation measures. Significant kills occur when specific cloudy/foggy weather conditions overlap with peak migration nights. The flashing lights (on towers over 200 feet tall for aviation safety) reflect off the water vapor in the air and form a "room" of light causing birds to switch to their diurnal (visual) mode of navigation. They end up circling the tower and colliding with guy wires, other structures in the vicinity, and other birds. The location of the tower with respect to regional geography and migration patterns plays an important role in determining a particular tower's kill potential. Any guyed and lighted communications tower over 200 feet can kill birds if the conditions are right.

We submit that, under this proposed rule, there may be 1000 new tall towers in the 1000+ foot range built across the continent within the next ten years to broadcast the new digital TV medium (see Smithsonian, July 1997). Based on the evidence that exists today, we believe that these towers alone will likely add another million or more songbirds to the annual tower kill toll. Along with all the new shorter towers, one can safely predict that annual tower kills across North America will soon exceed 5 million songbirds a year. The conduct of a complete EIS should examine the likelihood of significant mortality to birds from the proposed rule and the ascertainment of data on appropriate location and mitigation measures to prevent this massive avian mortality. Environmental site reviews before tower construction become all the more important and preempting local siting laws will clearly be detrimental to this protected resource. This rule expediting the construction of these towers is contrary to the protections afforded migratory birds under the Migratory Bird Protection Act and the ESA.

The FCC, in the conduct of the EIS, should work with the United States Fish and Wildlife Service's Office of Migratory Bird Management to develop well defined guidelines to minimize the impact of these towers on migratory birds.

In addition to the well documented environmental impacts on avian species there is a major environmental impact on vistas and landscapes. Vermont Senators Leahy and Jeffords introduced a Bill (S. 1350) on October 30th 1997 to counteract the FCC rule and preserve State and local authority to regulate the placement, construction, and modification of telecommunication towers primarily due to the environmental impacts on landscapes and vistas. The comments filed by other interested parties in this proceeding not only confirm, but underscore the requirement that the Commission's proposed rule requires an environmental analysis along these lines. The State of Vermont Environmental Board, for example, extensively described the environmental concerns associated with the placement of broadcast facilities atop Mount Mansfield. See Comments of the State of Vermont Environmental Board, at 16-23. (This reference and the ones that follow refer to filings before the FCC from these groups in the proposed rulemaking now before the FCC). Those comments describe the purposes and policies behind Vermont's Act 250, which contains carefully prescribed procedures designed to minimize any adverse impact on the environment, and which would be effectively preempted by the Commission's proposed rule. Similar concerns were expressed by the Hardwick Action Committee with respect to the environmental impact on Buffalo Mountain, also in Vermont. See Comments from the Hardwick Action Committee. These comments describe habitat destruction

from tower construction and ancillary structures including roads. Those comments identified the "myriad of wild creatures" living in the general vicinity of a proposed cellular phone tower (e.g., black bears, grouse, deer, flying squirrels, wild turkeys, moose, porcupines, etc.), and predicting that the construction of the tower on the mountain (along with accompanying parking lot, trailer and half mile long road) "would destroy wild life habitat." Id., at 4.

Significant environmental concerns were also expressed by the Adirondack Park Agency with respect to New York's Adirondack Park, a 6,000,000 acre area in northern New York. The comments describe the area as "the largest designated Wilderness area east of the Mississippi River." Comments of the Adirondack Park Agency, at 1. The Agency's comments quote the "century old provisions" in the New York State constitution reflecting that state's public policy regarding the environmental preservation of wilderness lands of this nature. Id. The Commission's proposed rule would preempt not only this longstanding constitutional mandate, but also New York State statutes which would otherwise protect the park lands with respect to broadcast transmission facilities. The comments of the New York Department of State reflect similar concerns in connection with the preemption of the New York Environmental Quality Review Act, the state counterpart of NEPA. See Comments of the Department of State, State of New York.

Also illustrative of the environmental impact of the proposed rule are the comments of the Pinelands Commission of the State of New Jersey. Those comments discuss the Congressional designation of a large tract of land within the state as The Pinelands National Reserve, as well as the important national interests behind that designation. The statutory designation mandates the adoption of a Comprehensive Management Plan ("CMP") which, among other things, requires an assessment of the "scenic, aesthetic, cultural, open space, and outdoor recreation resources of the area together with a determination of overall policies required to maintain and enhance those resources." Comments of The Pinelands Commission, at 1. As a result of that assessment, the CMP limits the height of structures (including radio and television transmission facilities) in certain areas of the Reserve "where future growth is severely restricted." Id. at 2. The comments express extreme concern over the preemption of this rule and other CMP restrictions of that nature.

The environmental impact of the Commission's proposed rule is exacerbated by the fact that it would include not only the towers, but also any "associated buildings." The City of Suffolk, Virginia, for example, noted that digital television towers "would undoubtedly be accompanied by 'associated buildings' that would also be exempt from zoning requirements, and even building restrictions." Comments of the City of Suffolk, Virginia, at 3. The City was rightfully concerned that its ability to "require mitigating actions such as screening, privacy fencing, storm water control or other general accepted methods" to lessen the impact of the facilities on the environment would be preempted by the proposed rule. Id. The same concerns were echoed by Congressman Thomas J. Bliley, Jr. His comments assert that the sites of broadcast towers "could then contain one or more large buildings, parking facilities, exterior lighting, etc., all of which would be exempt from local zoning and/or building regulations." Comments prepared for

Congressman Thomas J. Bliley, Jr., at 7. This would preclude local government from requiring "mitigating actions such as screening, privacy fencing, landscaping, storm water control, egress to the property, or other generally accepted methods of lessening the impact of the facility on the adjoining landowners and community." Id. Clearly, the inclusion of "associated buildings" within the proposed rule increases significantly the potential for adverse environmental impact.

These concerns for habitat destruction are exacerbated by the preferential location of these towers in environmentally sensitive areas, especially in wetlands and on mountaintops.

We at American Bird Conservancy urge the Federal Communications Commission to conduct an EIS or to reject the proposed rule. The data we have submitted on bird kills, possible mitigation measures, vistas and landscapes, and habitat destruction and degradation indicates that NEPA requires a full environmental impact statement. Further, broadcast towers are often sited in wetlands or other environmentally sensitive areas such as ridges and mountain tops, and construction impacts can permanently damage these habitats. The proposed rule would constitute a gross disregard for the Migratory Bird Treaty Act which prohibits the killing of migratory birds unless such killing is exempted. State and local requirements for appropriate land use and for the advancement of State, local and national conservation goals should be applied to these towers. Preemption of state and local environmental laws that apply to tower siting and operation is unwarranted especially with thousands of the high, bird-killing towers slated to be built within the next few years. Collisions with radio and TV broadcast towers may eventually lead to the killing of over 5 million birds each year. The red safety lights often used on towers have been found to attract flocks of migrating birds, leading to increased bird injury and mortality. The impacts of poorly sited transmission towers on migrating birds are well documented. Many species of neotropical migratory birds are experiencing steep population declines; the siting of numerous new broadcast towers in migration corridors could greatly exacerbate this problem. An EIS is warranted for this significant environmental effect.

State and local laws that govern the siting and operation of broadcast towers help avert or reduce these impacts. By preempting these laws, the proposed rule would ensure that construction and operation of broadcast towers will cause significantly greater harm than state and local laws currently permit.

The federal government has significant responsibility for the conservation of migratory birds and their habitats under four migratory bird treaties (with Mexico, Canada, Japan, and the former Soviet Union) that would be undermined by the proposed rule. The four treaties cover numerous species of neotropical migratory birds, many of which are experiencing steep declines in populations due in some part to collisions with tall structures in migratory flyways, including broadcast towers. The proposed rule threatens federal as well as state and local conservation efforts. While the Commission's discussion presents the proposed rule as a matter of balancing the federal interest in DTV against local environmental, health, and safety interests, the balance should make room for federal environmental interests as well. Those interests weigh solidly against the proposed rule and highlight the need for an EIS.

NEPA requires preparation of an EIS for every major federal action significantly affecting the human environment. Preempting all state and local environmental laws in the nation (including those mandated by Federal law) affecting the current 14,000 AM, FM and TV broadcast towers and the thousands of new towers to be built in the future is a significant Federal action affecting the environment. The CEQ rules so provide. An EIS is required. Giving the constructors of these towers free rein to ignore state and local environmental laws after an arbitrarily shortened period would have significant and lasting harmful impacts. Moreover, the Commission's regulations at 47 CFR 1307(a), require thorough environmental analysis of any action that may affect a listed species or may lead to construction in wetlands. The proposed rule will cause an increasing toll on migratory birds and environmental damage to habitat. The proposed rule also sets a poor precedent by federally mandating a special interest exception from legitimate state and local laws. We urge the Commission to conduct an EIS or to reject the proposed rule.

Thank you for your consideration of these comments.

Sincerely,

Gerald W. Winegrad
Vice President for Policy
American Bird Conservancy

Collision Course:
The Hazards of Lighted Structures and Windows to Migrating Birds

A Special Report by Lesley J. Evans Ogden for World Wildlife Fund Canada and the Fatal Light Awareness Program, September 1996

APPENDIX 1, Bird Collision Literature Summary Table
(TV Tower Collisions)

Locations	Years	No. Killed	No. Species	Predominant Species/Groups	Refere
WJBF-TV, Aiken, SC, USA	1962	400	32	Red eyed Vireo	766
Alleman, Iowa, USA	1972	726		406 (40%) Warbler	420
Baltimore, MD, USA	1964	1032	37	300 (29%) Ovenbird	669
Barrie, ON, CAN	1974	4900		1000 (20%) Bay-breasted Warbler, 900 (18%) Ovenbird	337
Boston, MA, USA	1958	300		Warbler, Vireo	63
Boyleston, MA, USA	1971	158	29	134 (85%) Warbler, 95 (60%) Blackpoll Warbler	62
Boylston, MA, USA	1970	350	29	266 (76%) Warbler	61
Buffalo, NY, USA	1978	359	51	44 (15%) Blackpoll Warbler, 36 (10%) Ovenbird, 35 (10%) Swainson's Thrush, 25 (7%) Red-eyed Vireo	892
Buffalo, NY, USA	1974	651		Warbler	165
Buffalo, NY, USA	1970	534	46	105 (20%) Yellow-rumped Warbler, 63 (12%) Black-throated Blue Warbler	775
Carolinas, USA	1962	4189	61	American Redstart, Ovenbird, Vireo	5
Cedar Rapids, IA, USA	1963			Thrush, Warbler	58
Chapel Hill, NC, USA	1956	2500	40	Warbler, Thrush	Cha (195 Ma
Chapel Hill, NC, USA	1956	2500		Warbler	15
Charleston, NC, USA	1954	1000-E18	24	Warbler, Common Yellowthroat	Cha (19 18
Charleston, SC, USA	1962			Red-eyed Vireo, Ovenbird, American Redstart	76
CHRE-TV, Regina, SK, CAN	1965	172		Warbler	9
CKCK-TV, Regina, SK, CAN	1965	227		Warbler	9
CKVR-TV, Barrie, ON, CAN	1975	175		Bay-breasted Warbler, Ovenbird, 414 (10%) Red-eyed Vireo, 313 (8%) Chestnut-sided Warbler	84
Columbia, MN, USA	1963	941		Red-eyed Vireo, Ovenbird	5
Dallas TX, USA	1960	11	1	Yellow Rail	8
Davenport, IA, USA	1960	281	25	Thrush, Warbler	5
Dayton, OH, USA	1966	305	49	Red-eyed Vireo, Golden-crowned Kinglet, Ovenbird	5
Des Moines, IA, USA	1974	1500		750 (50%) Red-eyed Vireo	4
WEAU-TV, Eau Clair, WI, USA	1957	1525	40	Warbler	4

				Red-eyed Vireo	
ON, CAN	1962	3446	66	Thrush, Warbler, Vireo	65
ON, CAN	1963	1190	71	Thrush, Warbler, Vireo	66
Orion, IL, USA	1959	88		Swainson's Thrush, Warbler	505
Philadelphia, USA	1948			Warbler	603
S. Atlantic coast, USA	1954			Ovenbird, Red-eyed Vireo	156
S. Erie County, NY, USA	1967-71	4094	82	450 (11%) Ovenbird, 409 (10%) Golden Crowned Kinglet, 287 (7%) Blackpoll Warbler, 287 (7%) Gray-cheeked Thrush, 246 (6%) Vireo	167
South Bend IN, USA	1959	49		Swainson's Thrush, Warbler	505
Topeka Tower, KS, USA	1967	800	43	240 (30%) Nashville Warbler	152
Topeka, KS, USA	1955	16	2	15 (94%) Mourning Warbler, 1 (6%) Connecticut Warbler	63
Various		16118		2498 (15.5%) Ovenbird, 1950 (12.1%) Tennessee Warbler, 1418 (8.8%) Red-eyed Vireo, 1418 (8.8%) Magnolia Warbler	259
Vero Beach, USA	1970	31		Warbler	633
WBAL-TV, Baltimore, MD, USA	1970	1965	43	489 (25%) Ovenbird, 410 (21%) Red-eyed Vireo	671
WBAL-TV, Baltimore, MD, USA	1973	180		Warbler	673
WBAL-TV, Baltimore, MD, USA	1970	1800	41	435 (24%) Ovenbird, 391 (22%) Red-eyed Vireo, 148 (8%) Black and White Warbler, 115 (6%) Common Yellowthroat, 81 (5%) Magnolia Warbler	
WBAL-TV, Baltimore, MD, USA	1964-66	3595	74	899 (25%) Ovenbird, 468 (13%) Black-and-white Warbler, 395 (11%) Magnolia Warbler	136
WBDO-TV, Orlando, FL, USA	1970	2790	51	Warbler	633
WCIX-TV, Homestead, USA	1970	300		Warbler	633
WCSH-TV, Sebago, USA	1973	300		Warbler, Thrush	292
WCTU-TV,Tallahassee, USA	1962	249		Red-eyed Vireo	578
WCTV-TV, Leon County, FL, USA	1963	735		81 (11%) Bobolink	191
WCTV-TV, Leon County, FL, USA	1964	709		335 (47%) Yellow-rumped Warbler	713
WCTV-TV, Leon County, FL, USA	1973-75	3864	109	896 (23%) Red-eyed Vireo, 219 (6%) Ovenbird, 159 (4%) Common Yellowthroat, 140 (4%) Magnolia Warbler	899
WCTV-TV, Tallahassee, USA	1960	237	53	Warbler	63
WCTV-TV, Tallahassee, USA	1960	384		230 (60%) Sparrow	63
WEAU-TV, Eau Clair, WI, USA	1968	145		Kinglet, Warbler	62
WECT & WWAY-TV, SE NC, USA	1971-77	7270		1023 (14%) Common Yellowthroat, 925 (13%) American Redstart, 865 (12%) Ovenbird, 701 (10%) Red-eyed Vireo, 549 (8%) Black-and-white Warbler	88
WECT-TV, NC, USA	1971	3070	84	Warbler, Sparrow, Thrush, Vireo, 583	Ch

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WCSH-TV, Sebago, USA	1973	300		Warbler, Thrush	292
WCTU-TV,Tallahassee, USA	1962	249		Red-eyed Vireo	578
WCTV-TV, Leon County, FL, USA	1963	735		81 (11%) Bobolink	191
WCTV-TV, Leon County, FL, USA	1964	709		335 (47%) Yellow-rumped Warbler	713
WCTV-TV, Leon County, FL, USA	1973-75	3864	109	896 (23%) Red-eyed Vireo, 219 (6%) Ovenbird, 159 (4%) Common Yellowthroat, 140 (4%) Magnolia Warbler	899
WCTV-TV, Tallahassee, USA	1960	237	53	Warbler	633
WCTV-TV, Tallahassee, USA	1960	384		230 (60%) Sparrow	637
WEAU-TV, Eau Clair, WI, USA	1968	145		Kinglet, Warbler	629
WECT & WWAY-TV, SE NC, USA	1971-77	7270		1023 (14%) Common Yellowthroat, 925 (13%) American Redstart, 865 (12%) Ovenbird, 701 (10%) Red-eyed Vireo, 549 (8%) Black-and-white Warbler	888
WECT-TV, NC, USA	1971	3070	84	Warbler, Sparrow, Thrush, Vireo, 583	Chat

	72			(19%) Common Yellowthroat, 288 (9.4%) Black-throated Blue Warbler, 267 (8.7%) Ovenbird, 218 (7.1%) Yellow-rumped Warbler, 163 (5.3%) Gray Catbird	(1976) 140(1)
WEHN-TV, Deerfield, NH, USA	1959	130		74 (57%) Ruby-crowned Kinglet	661
West Brands, IA, USA	1970	58	16	Kinglet, 14 (24%) Nashville Warbler, 9 (16%) Ruby-crowned Kinglet, 8 (14%) Yellow-rumped Warbler, 7 (12%) Golden-crowned Kinglet	1022
WFMJ-TV, Youngstown, OH, USA	1975	1057	39	Warbler, 317 (30%) Ovenbird	78
WFMS-TV, Youngstown, OH, USA	1977	315		Bay-breasted Warbler, Blackpoll Warbler	873
WHEN-TV, Syracuse, NY, USA	1959	45		Thrush, Vireo, Warbler	662
WHIO-TV, Dayton, OH, USA	1967	348	45	Red-eyed Vireo, Warbler	591
WHNT-TV, Huntsville, USA	1976	42	18	27 (64%) Warbler	896
WIS-TV, Columbia, SC, USA	1969	500	20	Warbler, Thrush, Vireo, Common Yellowthroat, Magnolia Warbler	165
WJBF-TV, Aiken, SC, USA	1962	200	32	48 (24%) Swainson's Thrush	Chat (1963) Mar
WJBF-TV, Aiken, SC, USA	1962	400	32	239 (60%) Red-eyed Vireo	601
WMC-TV, Memphis, TN, USA	1961	19	11	Warbler, Vireo	176
WMC-TV, Memphis, TN, USA	1964	99	21	58 (58%) Red-eyed Vireo	176
WPSK-TV, Clearfield Co. PA, USA	1969	75		Brown Creeper, Kinglet, Warbler	1039
WSM & WNGE-TV, Nashville TN, USA	1976	406	43	63 (16%) Ovenbird, 61 (15%) Tennessee Warbler, Magnolia Warbler, Bay-breasted Warbler	920
WSM & WSIX-TV, Nashville TN, USA	1971	3560		Warbler, 845 (24%) Tennessee Warbler, 631 (18%) Ovenbird, 429 (12%) Black-and-white Warbler, 420 (12%) Magnolia Warbler	452
WSM-TV, Nashville TN, USA	1967	160	12	115 (72%) Blackpoll Warbler	448
WSM-TV, Nashville TN, USA	1968	5408		4380 (81%) Warbler	450
WSYE-TV, Elmira, NY, USA	1963	200	36	Warbler	342
WSYE-TV, Elmira, NY, USA	1968	260	30	Warbler	346
WSYE-TV, Elmira, NY, USA	1973	465	39	Warbler	351
WSYE-TV, Elmira, NY, USA	1974	844		246 (29%) Bay-breasted Warbler	352
WSYE-TV, Elmira, NY, USA	1977	3874	48	1227 (32%) Bay-breasted Warbler, Magnolia Warbler, 311 (8%)Ovenbird, 218 (6%) Swainson's Thrush	353
Youngstown, OH, USA	1975	1050		305 (29%) Ovenbird	27

Bold indicates where number given is an estimate or a minimum

**Numbered references refer to Avery, M.L., P.F. Springer, and N.S. Dailey (1980). Avian mortality at man-made structures: An annotated bibliography (revised). U.S. Fish and Wildlife Service, Biological Services Program, National Power Plant Team, FWS/OBS-80/54. 152pp.*